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» Key

IEEE JNL IEEE Journal or Magazine

IEE JNL IEE Journal or Magazine

IEEE CNF IEEE Conference Proceeding

IEE CNF IEE Conference Proceeding

IEEE STD IEEE Standard

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- ☐ 1. **Human-robot interaction using facial gesture recognition**
 Zelinsky, A.; Heinzmann, J.;
Robot and Human Communication, 1996., 5th IEEE International Workshop or
 11-14 Nov. 1996 Page(s):256 - 261
 Digital Object Identifier 10.1109/ROMAN.1996.568837
[AbstractPlus](#) | Full Text: [PDF\(1304 KB\)](#) IEEE CNF
[Rights and Permissions](#)
- ☐ 2. **Face animation based on observed 3D speech dynamics**
 Kalberer, G.A.; Van Gool, L.;
Computer Animation, 2001. The Fourteenth Conference on Computer Animati
 7-8 Nov. 2001 Page(s):20 - 251
 Digital Object Identifier 10.1109/CA.2001.982373
[AbstractPlus](#) | Full Text: [PDF\(1199 KB\)](#) IEEE CNF
[Rights and Permissions](#)
- ☐ 3. **Human face watermarking based on Zernike moments**
 Tzouveli, P.; Ntalianis, K.; Kollias, S.;
Signal Processing and Information Technology, 2005. Proceedings of the Fifth
International Symposium on
 18-21 Dec. 2005 Page(s):399 - 404
 Digital Object Identifier 10.1109/ISSPIT.2005.1577130
[AbstractPlus](#) | Full Text: [PDF\(438 KB\)](#) IEEE CNF
[Rights and Permissions](#)
- ☐ 4. **Face tracking and hand gesture recognition for human-robot interaction**
 Brethes, L.; Menezes, P.; Lerasle, F.; Hayet, J.;
Robotics and Automation, 2004. Proceedings. ICRA '04. 2004 IEEE Internatio
 Volume 2, Apr 26-May 1, 2004 Page(s):1901 - 1906 Vol.2
 Digital Object Identifier 10.1109/ROBOT.2004.1308101
[AbstractPlus](#) | Full Text: [PDF\(558 KB\)](#) IEEE CNF
[Rights and Permissions](#)
- ☐ 5. **Speech enhancement in noise and within face mask (microphone array a**
 Kang, G.S.; Moran, T.M.;
Acoustics, Speech, and Signal Processing, 1998. ICASSP '98. Proceedings of
International Conference on
 Volume 2, 12-15 May 1998 Page(s):1017 - 1020 vol.2

Digital Object Identifier 10.1109/ICASSP.1998.675440

[AbstractPlus](#) | Full Text: [PDF\(360 KB\)](#) IEEE CNF
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- ☐ **6. Construction of 3-D micro structure by multi-face FAB, co-focus rotation; various mechanical tools**
Hatamura, Y.; Nakao, M.; Sato, T.; Koyano, K.; Ichiki, K.; Sangu, H.; Hatakeya T.; Nagai, K.;
[Micro Electro Mechanical Systems, 1994. MEMS '94. Proceedings. IEEE Work](#)
25-28 Jan. 1994 Page(s):297 - 302
Digital Object Identifier 10.1109/MEMSYS.1994.555826
[AbstractPlus](#) | Full Text: [PDF\(456 KB\)](#) IEEE CNF
[Rights and Permissions](#)

- ☐ **7. Geometric blur for template matching**
Berg, A.C.; Malik, J.;
[Computer Vision and Pattern Recognition, 2001. CVPR 2001. Proceedings of the](#)
[Computer Society Conference on](#)
Volume 1, 2001 Page(s):I-607 - I-614 vol.1
Digital Object Identifier 10.1109/CVPR.2001.990529
[AbstractPlus](#) | Full Text: [PDF\(1134 KB\)](#) IEEE CNF
[Rights and Permissions](#)

- ☐ **8. Error recovery in critical infrastructure systems**
Knight, J.C.; Elder, M.C.; Xing Du;
[Computer Security, Dependability and Assurance: From Needs to Solutions, 1998](#)
7-9 July 1998 & 11-13 November 1998 Page(s):49 - 71
Digital Object Identifier 10.1109/CSDA.1998.798357
[AbstractPlus](#) | Full Text: [PDF\(780 KB\)](#) IEEE CNF
[Rights and Permissions](#)

- ☐ **9. Joint feature-basis subset selection**
Avidan, S.;
[Computer Vision and Pattern Recognition, 2004. CVPR 2004. Proceedings of the](#)
[Computer Society Conference on](#)
Volume 1, 27 June-2 July 2004 Page(s):I-283 - I-290 Vol.1
Digital Object Identifier 10.1109/CVPR.2004.1315044
[AbstractPlus](#) | Full Text: [PDF\(335 KB\)](#) IEEE CNF
[Rights and Permissions](#)

- ☐ **10. Lessons learnt from five years of experience in ERP requirements engineering**
Daneva, M.;
[Requirements Engineering Conference, 2003. Proceedings. 11th IEEE International](#)
8-12 Sept. 2003 Page(s):45 - 54
[AbstractPlus](#) | Full Text: [PDF\(268 KB\)](#) IEEE CNF
[Rights and Permissions](#)

- ☐ **11. Dynamic time warping for off-line recognition of a small gesture vocabulary**
Corradini, A.;
[Recognition, Analysis, and Tracking of Faces and Gestures in Real-Time Systems](#)
[Proceedings. IEEE ICCV Workshop on](#)
13 July 2001 Page(s):82 - 89
Digital Object Identifier 10.1109/RATFG.2001.938914
[AbstractPlus](#) | Full Text: [PDF\(600 KB\)](#) IEEE CNF
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- ☐ **12. Impact of RSF with variable coefficients for CD variation analysis including**
Goda, A.; Misaka, A.; Odanaka, S.;
[Statistical Metrology, 1999. IWSM. 1999 4th International Workshop on](#)

12 June 1999 Page(s):62 - 65
Digital Object Identifier 10.1109/IWSTM.1999.773197
[AbstractPlus](#) | Full Text: [PDF\(288 KB\)](#) IEEE CNF
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☐ **13. Analysis-by-synthesis and example based animation with topology constraints**

Jockusch, S.; Ritter, H.;
[Image Processing, 1994. Proceedings. ICIP-94., IEEE International Conference on](#)
Volume 3, 13-16 Nov. 1994 Page(s):953 - 957 vol.3
Digital Object Identifier 10.1109/ICIP.1994.413704
[AbstractPlus](#) | Full Text: [PDF\(584 KB\)](#) IEEE CNF
[Rights and Permissions](#)

☐ **14. Integration of gaze and gesture detection in nature language instructing assembly scenario**

Jianwei Zhang; Baier, T.; Hueser, M.;
[Robot and Human Interactive Communication, 2002. Proceedings. 11th IEEE Workshop on](#)
25-27 Sept. 2002 Page(s):241 - 246
Digital Object Identifier 10.1109/ROMAN.2002.1045629
[AbstractPlus](#) | Full Text: [PDF\(477 KB\)](#) IEEE CNF
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Dept. of Syst. Eng., Australian Nat. Univ., Canberra, ACT, Australia;

This paper appears in: **Robot and Human Communication, 1996., 5th IEEE Internatio**

Publication Date: 11-14 Nov. 1996

On page(s): 256 - 261

Number of Pages: xv+550

Meeting Date: 11/11/1996 - 11/14/1996

Location: Tsukuba

INSPEC Accession Number: 5502130

Digital Object Identifier: 10.1109/ROMAN.1996.568837

Posted online: 2002-08-06 20:48:04.0

Abstract

People naturally express themselves through **facial** gestures and expressions. Our goal gesture human-computer interface for use in robot applications. We have implemented a person's **facial** features in real time (30 Hz). Our system does not require special illumination. The work is **focused** on real-time **face** tracking using dedicated hardware based matching. Tracking using **template** matching suffers from changing shade and deformation disappearance of **facial** features. By using multiple Kalman filters we accurately predict **a facial** features. This is despite disturbances and rapid movements of the head (including rotational motion). Since we reliably track the **face** in real-time we are also able to recognize of the face. Our system can recognize a large set of gestures ranging from "yes", "no" and detecting winks, blinks and sleeping

Index Terms**Index****Controlled Indexing**
[Kalman filters](#) [computer vision](#) [face recognition](#) [image matching](#) [interactive : man-machine systems](#) [real-time systems](#) [robots](#) [tracking](#) [user interfaces](#)
Non-controlled Indexing
[Kalman filters](#) [face tracking](#) [facial gesture recognition](#) [human-computer interaction](#) [robot interaction](#) [real time systems](#) [template matching](#)
Author Keywords

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EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	116	((face faces facial) and (template\$1 kernal\$1 mask\$1) and (unsharp\$5 blur\$4 focus\$4)).clm.	US-PGPUB	OR	OFF	2006/12/22 10:54
L2	40	((face faces facial) and ((template\$1 kernal\$1 mask\$1) same (unsharp\$5 blur\$4 focus\$4))).clm.	US-PGPUB	OR	OFF	2006/12/22 10:58
L3	76	1 not 2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/12/22 10:58

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	63828	(image\$1 and (template\$1 or mask\$1 or kernal\$1 or reference\$1)) and (match or compare)	USPAT	OR	OFF	2003/11/20 14:22
S2	14913	((image\$1 and (template\$1 or mask\$1 or kernal\$1 or reference\$1)) and (match or compare)) and face	USPAT	OR	OFF	2003/08/14 15:05
S3	565	((image\$1 and (template\$1 or mask\$1 or kernal\$1 or reference\$1)) and (match or compare)) and face and ((degree near2 (match or similarity)) or similarity)	USPAT	OR	OFF	2003/08/14 15:53
S4	883	382/165,195,201,209.ccls.	USPAT	OR	OFF	2003/08/14 16:24
S5	805	382/165,195,201,209.ccls. and (template\$1 or mask\$1 or kernal\$1 or reference)	USPAT	OR	OFF	2003/08/14 16:25
S6	523	(382/165,195,201,209.ccls. and (template\$1 or mask\$1 or kernal\$1 or reference)) and fac\$4	USPAT	OR	OFF	2006/12/22 10:13
S7	890	Takemoto.in.	USPAT	OR	OFF	2003/11/19 09:36
S8	22165	Fuji.as.	USPAT	OR	OFF	2003/11/19 09:37
S9	20	Takemoto.in. and Fuji.as.	USPAT	OR	OFF	2003/11/19 09:41
S10	0	fac\$^ near3 template	USPAT	OR	OFF	2003/11/19 09:41
S11	1049	fac\$6 near3 template	USPAT	OR	OFF	2003/11/19 09:42
S12	0	(fac\$6 near3 template) and rotat43	USPAT	OR	OFF	2003/11/19 09:42
S13	464	(fac\$6 near3 template) and rotat\$3	USPAT	OR	OFF	2003/11/19 09:43
S14	16	(US-5912721-\$ or US-5901246-\$ or US-5850470-\$ or US-5842194-\$ or US-6529630-\$ or US-6529613-\$ or US-6498868-\$ or US-6501857-\$ or US-6075557-\$ or US-6072894-\$ or US-6038333-\$ or US-6035055-\$ or US-6018592-\$ or US-5982912-\$ or US-5963670-\$ or US-5917940-\$).did.	USPAT	OR	OFF	2003/11/19 15:58
S15	4	((US-5912721-\$ or US-5901246-\$ or US-5850470-\$ or US-5842194-\$ or US-6529630-\$ or US-6529613-\$ or US-6498868-\$ or US-6501857-\$ or US-6075557-\$ or US-6072894-\$ or US-6038333-\$ or US-6035055-\$ or US-6018592-\$ or US-5982912-\$ or US-5963670-\$ or US-5917940-\$).did.) and 3d and rotation	USPAT	OR	OFF	2003/11/19 15:58

EAST Search History

S16	4	3D and ((fac\$5 near3 (determin\$5 or extract\$5)) near3 image\$1) same (template\$1 near3 (match\$3 or compar\$6))	USPAT	OR	OFF	2003/11/20 13:41
S17	0	3D near3 (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6)) same (resolution\$1 near3 (different or multiple))	USPAT	OR	OFF	2003/11/20 14:25
S18	2	3D near3 (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6)) and (resolution\$1 near3 (different or multiple))	USPAT	OR	OFF	2003/11/20 14:26
S19	18	3D near3 (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))	USPAT	OR	OFF	2003/11/20 14:30
S20	118	3D same (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))	USPAT	OR	OFF	2003/11/20 14:45
S21	16	(3D same (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))) and (templat\$1 or kernal\$1)	USPAT	OR	OFF	2003/11/20 14:30
S22	102	(3D same (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))) not ((3D same (fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))) and (templat\$1 or kernal\$1))	USPAT	OR	OFF	2003/11/20 14:37
S23	49713	(fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))	USPAT	OR	OFF	2003/11/20 14:48
S24	367	((fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6))) and (templat\$1 near3 (match\$4 or compar\$4))	USPAT	OR	OFF	2003/11/20 14:47
S25	66	(fac\$3 near3 (detect\$3 or identif\$6 or recogn\$5 or segment\$6)) same (template\$1 near3 (match\$4 or compar\$4))	USPAT	OR	OFF	2003/11/20 14:49
S26	0	3D near3 (facial near2 template\$1)	USPAT	OR	OFF	2003/11/21 13:07
S27	0	3D near5 (facial near2 template\$1)	USPAT	OR	OFF	2003/11/21 13:07
S28	1	3D same (facial near2 template\$1)	USPAT	OR	OFF	2003/11/21 13:08
S29	1	3D same (fac\$3 near2 template\$1)	USPAT	OR	OFF	2003/11/21 13:08
S30	2	3D same (fac\$3 near4 template\$1)	USPAT	OR	OFF	2003/11/21 13:09
S31	17	(three near2 dimension\$5) same (fac\$3 near4 template\$1)	USPAT	OR	OFF	2003/11/21 13:10

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S32	33	(US-6493465-\$ or US-6498868-\$ or US-6501857-\$ or US-6529613-\$ or US-6529630-\$ or US-5963670-\$ or US-5982912-\$ or US-5842194-\$ or US-5715325-\$ or US-6574354-\$ or US-5771307-\$ or US-6594629-\$ or US-6640145-\$ or US-6028960-\$ or US-6301370-\$ or US-6477275-\$ or US-6018592-\$ or US-6038333-\$ or US-6035055-\$ or US-5850470-\$ or US-6075557-\$ or US-6072894-\$ or US-5901246-\$ or US-5912721-\$ or US-5917940-\$ or US-6243494-\$).did. or (US-6154559-\$ or US-5802220-\$ or US-6526161-\$ or US-6483532-\$ or US-6044168-\$ or US-6639998-\$ or US-6504944-\$).did.	USPAT	OR	OFF	2003/11/21 15:30
S33	2	((US-6493465-\$ or US-6498868-\$ or US-6501857-\$ or US-6529613-\$ or US-6529630-\$ or US-5963670-\$ or US-5982912-\$ or US-5842194-\$ or US-5715325-\$ or US-6574354-\$ or US-5771307-\$ or US-6594629-\$ or US-6640145-\$ or US-6028960-\$ or US-6301370-\$ or US-6477275-\$ or US-6018592-\$ or US-6038333-\$ or US-6035055-\$ or US-5850470-\$ or US-6075557-\$ or US-6072894-\$ or US-5901246-\$ or US-5912721-\$ or US-5917940-\$ or US-6243494-\$).did. or (US-6154559-\$ or US-5802220-\$ or US-6526161-\$ or US-6483532-\$ or US-6044168-\$ or US-6639998-\$ or US-6504944-\$).did.) and (display\$4 near2 (image\$1 and template\$1))	USPAT	OR	OFF	2003/11/21 15:42
S34	23	((US-6493465-\$ or US-6498868-\$ or US-6501857-\$ or US-6529613-\$ or US-6529630-\$ or US-5963670-\$ or US-5982912-\$ or US-5842194-\$ or US-5715325-\$ or US-6574354-\$ or US-5771307-\$ or US-6594629-\$ or US-6640145-\$ or US-6028960-\$ or US-6301370-\$ or US-6477275-\$ or US-6018592-\$ or US-6038333-\$ or US-6035055-\$ or US-5850470-\$ or US-6075557-\$ or US-6072894-\$ or US-5901246-\$ or US-5912721-\$ or US-5917940-\$ or US-6243494-\$).did. or (US-6154559-\$ or US-5802220-\$ or US-6526161-\$ or US-6483532-\$ or US-6044168-\$ or US-6639998-\$ or US-6504944-\$).did.) and color	USPAT	OR	OFF	2003/11/21 15:25

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S35	11	((US-6493465-\$ or US-6498868-\$ or US-6501857-\$ or US-6529613-\$ or US-6529630-\$ or US-5963670-\$ or US-5982912-\$ or US-5842194-\$ or US-5715325-\$ or US-6574354-\$ or US-5771307-\$ or US-6594629-\$ or US-6640145-\$ or US-6028960-\$ or US-6301370-\$ or US-6477275-\$ or US-6018592-\$ or US-6038333-\$ or US-6035055-\$ or US-5850470-\$ or US-6075557-\$ or US-6072894-\$ or US-5901246-\$ or US-5912721-\$ or US-5917940-\$ or US-6243494-\$).did. or (US-6154559-\$ or US-5802220-\$ or US-6526161-\$ or US-6483532-\$ or US-6044168-\$ or US-6639998-\$ or US-6504944-\$).did.) and ((skin or face) near3 color)	USPAT	OR	OFF	2003/11/21 15:28
S36	1	((US-6493465-\$ or US-6498868-\$ or US-6501857-\$ or US-6529613-\$ or US-6529630-\$ or US-5963670-\$ or US-5982912-\$ or US-5842194-\$ or US-5715325-\$ or US-6574354-\$ or US-5771307-\$ or US-6594629-\$ or US-6640145-\$ or US-6028960-\$ or US-6301370-\$ or US-6477275-\$ or US-6018592-\$ or US-6038333-\$ or US-6035055-\$ or US-5850470-\$ or US-6075557-\$ or US-6072894-\$ or US-5901246-\$ or US-5912721-\$ or US-5917940-\$ or US-6243494-\$).did. or (US-6154559-\$ or US-5802220-\$ or US-6526161-\$ or US-6483532-\$ or US-6044168-\$ or US-6639998-\$ or US-6504944-\$).did.) and ((chang\$3 or modify\$4 or alter\$4) near3 ((skin or face) near3 color))	USPAT	OR	OFF	2003/11/21 15:30
S37	4	(fac\$3 near3 template\$1) and ((chang\$3 or modify\$4 or alter\$4) near3 ((skin or face) near3 color))	USPAT	OR	OFF	2003/11/21 15:31
S38	1006	382/154,115,118,119.ccls.	USPAT	OR	OFF	2003/11/21 15:42
S39	160	382/154,115,118,119.ccls. and fac\$3 and template\$1	USPAT	OR	OFF	2003/11/21 15:43
S40	2048	(3D or (three near2 dimension\$4)) near "5" (fac\$3 near2 template\$1)	USPAT	OR	OFF	2003/11/23 11:57
S41	6	(3D or (three near2 dimension\$4)) near5 (fac\$3 near2 template\$1)	USPAT	OR	OFF	2003/11/23 11:57
S42	97	(3D or (three near2 dimension\$4)) near5 (fac\$3 near2 (template\$1 or kernal\$1 or mask\$1 or model\$1))	USPAT	OR	OFF	2003/11/23 12:24

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S43	39	((3D or (three near2 dimension\$4)) near5 (fac\$3 near2 (template\$1 or kernal\$1 or mask\$1 or model\$1))) and image\$1 and (fac\$3 near3 (extract\$4 or locat\$4 or determin\$5))	USPAT	OR	OFF	2003/11/23 12:23
S44	8	("5844573" "5990901" "6020892" "6147692" "6366281" "6268846" "6320583" "6362833").PN.	USPAT	OR	OFF	2003/11/23 12:01
S45	20708	image\$1 and (fac\$3 near3 (extract\$4 or locat\$4 or determin\$5))	USPAT	OR	OFF	2003/11/23 12:27
S46	680	(image\$1 and (fac\$3 near3 (extract\$4 or locat\$4 or determin\$5))) and (fac\$3 near2 (template\$1 or kernal\$1 or mask\$1 or model\$1))	USPAT	OR	OFF	2003/11/23 12:25
S47	17	(image\$1 and (fac\$3 near3 (extract\$4 or locat\$4 or determin\$5))) and (3D near4 (fac\$3 near2 (template\$1 or kernal\$1 or mask\$1 or model\$1)))	USPAT	OR	OFF	2003/11/23 12:27
S48	52	((image\$1 and (fac\$3 near3 (extract\$4 or locat\$4 or determin\$5))) and (((fac\$3 or skin) near3 (color or tone)) same (modify\$4 or alter\$4 or chang\$4))) and (template\$1 or kernal\$1 or mask\$1)	USPAT	OR	OFF	2003/11/24 14:51
S49	203	(image\$1 and (fac\$3 near3 (extract\$4 or locat\$4 or determin\$5))) and (((fac\$3 or skin) near3 (color or tone)) same (modify\$4 or alter\$4 or chang\$4))	USPAT	OR	OFF	2003/11/24 14:33
S50	0	(3d near2 (fac\$3 near2 template\$1)) and ((skin or flesh or fac\$3) near3 (chang\$3 or alter\$4 or modify\$4))	USPAT	OR	OFF	2003/11/24 14:53
S51	0	(3d near5 (fac\$3 near2 template\$1)) and ((skin or flesh or fac\$3) near3 (chang\$3 or alter\$4 or modify\$4))	USPAT	OR	OFF	2003/11/24 14:53
S52	0	(3d near5 (fac\$3 near5 template\$1)) and ((skin or flesh or fac\$3) near3 (chang\$3 or alter\$4 or modify\$4))	USPAT	OR	OFF	2003/11/24 14:54
S53	0	((three near2 dimension\$3) near5 (fac\$3 near5 template\$1)) and ((skin or flesh or fac\$3) near3 (chang\$3 or alter\$4 or modify\$4))	USPAT	OR	OFF	2003/11/24 14:54
S54	11	((three near2 dimension\$3) near5 template\$1) and ((skin or flesh or fac\$3) near3 (chang\$3 or alter\$4 or modify\$4))	USPAT	OR	OFF	2003/11/24 14:56
S55	101	(3d or (three near2 dimension\$4)) same (fac\$3 near3 (template\$3 or kernal\$3 or mask\$1))	USPAT	OR	OFF	2003/11/24 14:58

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S56	290	template\$1 same (((skin or flesh) near3 color) or (cyan near2 blue) or cyanblue or complimentary)	USPAT	OR	OFF	2003/11/24 15:07
S57	6578	template\$1 same (((skin or flesh) near3 color) or (cyan near2 blue) or cyanblue or complimentary or complementary)	USPAT	OR	OFF	2003/11/24 15:08
S58	5226	(template\$1 same (((skin or flesh) near3 color) or (cyan near2 blue) or cyanblue or complimentary or complementary)) and fac\$3	USPAT	OR	OFF	2003/11/24 15:08
S59	472	((template\$1 same (((skin or flesh) near3 color) or (cyan near2 blue) or cyanblue or complimentary or complementary)) and fac\$3) and (fac\$3 near3 (determin\$6 or locat\$6 or extract\$6))	USPAT	OR	OFF	2003/11/24 15:09
S60	323697	((template\$1 same (((skin or flesh) near3 color) or (cyan near2 blue) or cyanblue or complimentary or complementary)) and fac\$3) and (fac\$3 near3 (determin\$6 or locat\$6 or extract\$6))) and face or faces	USPAT	OR	OFF	2003/11/24 15:10
S61	99	((template\$1 same (((skin or flesh) near3 color) or (cyan near2 blue) or cyanblue or complimentary or complementary)) and fac\$3) and (fac\$3 near3 (determin\$6 or locat\$6 or extract\$6))) and (face or faces)	USPAT	OR	OFF	2003/11/24 15:10
S62	40	template\$ near5 ((different or multiple) near3 color\$1)	USPAT	OR	OFF	2003/11/24 15:42
S63	2	"6075557".pn.",6044168".pn.	USPAT	OR	OFF	2003/11/25 15:56
S64	4	"6044168".pn.",6075557".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/06/25 15:20
S68	4	"6044168".pn.",6075557".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 13:50
S69	2	S68 and (user\$1 or manual\$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 13:52

EAST Search History

S70	37996	((face faces facial) same (rotat\$6 transform\$6 mov\$6 chang\$6 alter\$8 modif\$8)) same (user\$1 or manual\$2))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:13
S71	5397	S70 and human	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 13:54
S72	989	S70 and ((template\$2 kernal\$1 reference\$1 mask\$1) near3 (compar\$4 match\$3 correlat\$6))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:14
S73	966	S72 and (position\$1 location\$1 point\$1 fiducial\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:05
S74	637	S73 and imag\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:08
S75	197	S74 and (fac\$5 near3 recogni\$7)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:09
S76	2299	((face faces facial) same (rotat\$6 transform\$6 mov\$6 chang\$6 alter\$8 modif\$8)) near4 (user\$1 or manual\$2))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:13
S77	91	S76 and ((template\$2 kernal\$1 reference\$1 mask\$1) near3 (compar\$4 match\$3 correlat\$6))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:35
S78	34	((fac\$5 near3 recognition) same (template\$1 kernal\$1 mask\$1 and refernece\$1)) same (user or manual\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:41
S79	231	((fac\$5 near3 recognition) same (template\$1 kernal\$1 mask\$1 and refernece\$1))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:41

EAST Search History

S80	211	S79 and (rotat\$8 transform\$6 alter\$9 modif\$7mov\$6 chang\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 14:54
S81	167	S80 and (user\$1 or manual\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/06 15:24
S82	4	"6044168".pn.",6075557".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 11:45
S83	309	(faci\$4 near4 (match\$4 compar\$4 identif\$6)) and ((imag\$1 same (template\$1 kernal\$1 mask\$1 reference\$1 standard\$1)) same display\$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 11:50
S84	147	S83 and ((user manual\$4) same (mov\$6 transform\$6 rotat\$4 alter\$4))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 12:29
S85	247247	"84" and (face faces facial)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 12:30
S86	309	(faci\$4 near4 (match\$4 compar\$4 identif\$6)) and ((imag\$1 same (template\$1 kernal\$1 mask\$1 reference\$1 standard\$1)) same display\$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 12:29
S87	147	S86 and ((user manual\$4) same (mov\$6 transform\$6 rotat\$4 alter\$4))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 12:29
S88	108	S87 and (face faces facial)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 15:05
S89	5	"2324428".pn.",0877274".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 15:09

EAST Search History

S90	0	"00877274".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 15:06
S91	5	"877274".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 15:06
S92	4	"2324428".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 15:09
S93	8	"4996642".pn.",5576778".pn.", 5983201".pn.",6231188".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/01 15:24
S94	11	((face faces facial) near4 (recogni\$6 identif\$8)) same (imag\$4 and template\$1) same (interactiv\$5 manual\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 15:14
S95	15	((face faces facial) near4 (recogni\$6 identif\$8 extract\$5)) same (imag\$4 and template\$1) same (interactiv\$5 manual\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 15:16
S96	4	S95 not S94	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 15:15
S97	130	((face faces facial) near4 (recogni\$6 identif\$8 extract\$5)) same (imag\$4 and template\$1) and (interactiv\$5 manual\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 15:16
S98	509	((fac\$4 near4 (recogni\$7 identif\$4 extract\$4)) same template\$1) and (user\$1 interactiv\$5 manual\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 16:53
S99	274	((((face faces facial) near4 (recogni\$7 identif\$4 extract\$4)) same template\$1) and (user\$1 interactiv\$5 manual\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 16:54

EAST Search History

S10 0	688	(fac\$4 same template\$1) same display\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 16:54
S10 1	33	S99 and (fac\$4 same template\$1) same display\$4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/02 16:54
S10 2	1	((((face faces facial) near5 (recogniz\$7 identif\$7 extract\$5)) same imag\$4) same (complementary near3 color\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/03 17:32
S10 3	1	((((face faces facial) near5 (recogniz\$7 identif\$7 extract\$5)) same imag\$4) same (3D and wire)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/03 17:34
S10 4	53	((((face faces facial) near5 (recogniz\$7 identif\$7 extract\$5)) same imag\$4) and (3D and wire)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/03 17:40
S10 5	27	((((face faces facial) near5 (recogniz\$7 identif\$7 extract\$5)) same imag\$4) and (3D and wire) and template\$	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/03 17:41
S10 6	0	((((face faces facial) near5 (recogniz\$7 identif\$7 extract\$5)) same imag\$4) and ((3D and wire) same template\$)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/04/03 17:41
S10 7	629	imag\$4 and (((face faces facial) near3 (template\$1 kernal\$1 mask\$1)) same ((face faces facial) near3 (imag\$4 frame\$1)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 09:49
S10 8	290	S107 and ((transform\$3 rotat\$4 mov\$4 translat\$6) same ((templat\$1 imag\$4) and (faces face facial)))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 10:08
S10 9	53	S108 and (((template\$1 mask\$1 kernal\$1) same (image\$1 frame\$1)) same align\$5)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 10:39

EAST Search History

S11 0	93	((template\$1 mask\$1 kernal\$1) same (image\$1 frame\$1)) same (face facial faces) same (superimpos\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 11:00
S11 1	1585	((template\$1 mask\$1 kernal\$1) same (image\$1 frame\$1)) same (face facial faces) same ((on near3 top) above layer\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 11:38
S11 2	213	S111 and (((extract\$4 locat\$4 determin\$4) near4 (face faces facial)) same imag\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 11:02
S11 3	67	((template\$1 mask\$1 kernal\$1) same (image\$1 frame\$1)) same (face facial faces) same (overlay\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 12:13
S11 4	6673	((template\$1 mask\$1 kernal\$1) same (image\$1 frame\$1)) same (face facial faces)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 12:14
S11 5	232	S114 and (position\$3 near4 match\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 12:14
S11 6	16	"6088040"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 13:47
S11 7	48	((extract\$6 near4 (face faces facial)) near4 (region\$1 area\$1)) same ((template\$1 kernal\$1 mask\$1) and match\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 13:49
S11 8	290	((face faces facial) and (imag\$4 and (templat\$4 kernal\$1 mask\$1))) same (superimpos\$4 overlay\$4 overlaid)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/04 14:52
S11 9	51	S118 and (((locat\$6 extract\$5) near5 (face faces facial)) same imag\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/04 14:52

EAST Search History

S12 0	727	((face faces facial) and (imag\$4 and (templat\$4 kernal\$1 mask\$1))) same (move moving)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/04 14:52
S12 1	108	S120 and (((locat\$6 extract\$5) near5 (face faces facial)) same imag\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/04 14:52
S12 2	6	"6088040".pn.",6181806".pn.", 6035074".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/06 15:11
S12 3	103	((extract\$4 near4 (face faces facial)) near4 imag\$4) same template\$1 same ((position\$1 location\$1) (match\$4 compar\$4))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2006/01/06 15:29
S12 4	0	((face near5 recogni\$7) same (template near5 match\$4) same (unsharp\$5 blurr\$6))	USPAT	OR	OFF	2006/07/19 16:41
S12 5	30	((face near5 recogni\$7) same (template\$ near5 match\$4))	USPAT	OR	OFF	2006/07/19 17:16
S12 6	3	((unsharp\$6 blur\$7) near5 (imag\$4 and template\$4)) and imag\$4	USPAT	OR	OFF	2006/07/19 17:22
S12 7	14019	((unsharp\$6 blur\$7) near5 (imag\$4 template\$4)) and imag\$4	USPAT	OR	OFF	2006/07/19 17:23
S12 8	144	S127 and (templat\$4 near4 match\$4)	USPAT	OR	OFF	2006/07/19 17:41
S12 9	0	(template\$4 near4 match\$4) same ((unsharp\$5 blur\$4) near4 (template\$1 and imag\$4))	USPAT	OR	OFF	2006/07/19 17:42
S13 0	8	(template\$4 near4 match\$4) same ((unsharp\$5 blur\$4) near4 (template\$1 imag\$4))	USPAT	OR	OFF	2006/07/19 17:42
S13 1	0	(blur\$6 near4 template\$1) and (template near3 match\$4)	USPAT	OR	OFF	2006/07/20 07:57
S13 2	2	(blur\$6 near4 template\$1) and (template near3 match\$4)	USPAT	OR	OFF	2006/07/20 07:58
S13 3	0	(unsharp\$4 near4 template\$1) and (template near3 match\$4)	USPAT	OR	OFF	2006/07/20 07:59
S13 4	0	(unsharp\$4 near49 template\$1) and (template near3 match\$4)	USPAT	OR	OFF	2006/07/20 07:59
S13 5	7	(blur\$6 near9 template\$1) and (template near3 match\$4)	USPAT	OR	OFF	2006/07/20 08:01

EAST Search History

S13 6	4	(blur\$6 near9 template\$1) and (position near3 match\$4)	USPAT	OR	OFF	2006/07/20 08:01
S13 7	0	(unsharp\$4 near9 template\$1) and (position near3 match\$4)	USPAT	OR	OFF	2006/07/20 08:02
S13 8	4	(sharp\$4 near9 template\$1) and (position near3 match\$4)	USPAT	OR	OFF	2006/07/20 08:02
S13 9	3	"6181806".pn.",6035074".pn.", 6466685".pn.	USPAT	OR	OFF	2006/07/20 09:00
S14 0	5251	382/100,115,118,119,154,162,165, 181,195,201,209.ccls.	USPAT	OR	OFF	2006/12/22 10:26
S14 1	555	S140 and (template\$1 kernal\$1 mask\$1) and (face faces facial)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/12/22 10:27
S14 2	20	S141 and ((unsharp\$4 blurr\$4 focus\$4) near6 (template\$1 kernal\$1 mask\$1))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/12/22 10:40
S14 3	116	((face faces facial) and (template\$1 kernal\$1 mask\$1) and (unsharp\$5 blur\$4 focus\$4)).clm.	US-PGPUB	OR	OFF	2006/12/22 10:54
S14 4	40	((face faces facial) and ((template\$1 kernal\$1 mask\$1) same (unsharp\$5 blur\$4 focus\$4))).clm.	US-PGPUB	OR	OFF	2006/12/22 10:58
S14 5	76	S143 not S144	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/12/22 11:01